WHAT IS CLAIMED IS:

1. A digital matched filter for despreading on reception side a received signal sequence having been spread on transmission side, comprising:

received signal holding means for successively holding a predetermined number of samples among samples constituting said received signal sequence input in time-series manner;

spreading code generating means for generating a spreading code sequence for said despreading; and

correlation value calculating means for calculating a correlation value between said predetermined number of samples held in said received signal holding means and said generated spreading code sequence,

said correlation value calculating means including

first product-sum calculating means for calculating a correlation value between a part of the predetermined number of samples held in said received signal holding means and spreading codes corresponding to said part of samples in said generated spreading code sequence,

second product-sum calculating means for calculating a correlation value between the rest of samples of the predetermined number of samples held in said received signal holding means and spreading codes corresponding to said rest of samples in said generated spreading code sequence, and

decision means for deciding whether the correlation value output from said first product-sum calculating means exceeds a predetermined threshold value to stop calculation by said second product-sum calculating means when said decision means decides that the correlation value output from said first product-sum calculating means does not exceed said predetermined threshold value.

2. A digital matched filter for despreading on reception side a received signal sequence having been spread on transmission side, comprising:

received signal holding means for successively holding samples
constituting said received signal sequence input in time-series manner,
said received signal holding means including
a predetermined number of storage circuits for holding in parallel
samples in said predetermined number of said received signal sequence
input in time-series manner,
logic circuits in said predetermined number provided at respective
preceding stages of said predetermined number of storage circuits, said logic
circuits each activated to pass an input signal to a corresponding one of said
storage circuits and mask the input signal otherwise,
first control means for cyclically causing write enable state of said
predetermined number of storage circuits at predetermined timing to
cyclically write said samples of the received signal sequence input in time-
series manner into said predetermined number of storage circuits at said
predetermined timing, and
second control means for cyclically activating said predetermined
number of logic circuits at said predetermined timing to cyclically input said
samples of the received signal sequence input in time-series manner to said
predetermined number of storage circuits at said predetermined timing; and
said digital matched filter further comprising
spreading code generating means for generating a spreading code
sequence for said despreading; and
correlation value calculating means for calculating a correlation
value between said samples of the received signal sequence held in parallel
in said predetermined number of storage circuits and said spreading code
sequence.

3.   The digital matched filter according to claim 2, wherein
said predetermined number of logic circuits each have a load
capacitance smaller than a load capacitance of each of said predetermined
number of storage circuits.

4.   A digital matched filter for despreading on reception side a

received signal sequence having been spread on transmission side, comprising:

received signal holding means for successively holding a first

5   predetermined number of samples among samples constituting said received signal sequence input in time-series manner, said first predetermined number of samples held being divided into a second predetermined number of groups;

spreading code generating means for generating a spreading code

10   sequence for said despreading;

correlation value calculating means in said second predetermined number provided respectively corresponding to said second predetermined number of groups each for calculating a correlation value between samples of a corresponding group and said spreading code sequence; and

15   output control means for successively outputting in time-series manner respective correlation values output from said second predetermined number of correlation value calculating means as correlation values output from one system.

5.   A digital matched filter for despreading on reception side a received signal sequence having been spread on transmission side, comprising:

received signal holding means for successively holding samples

5   constituting said received signal sequence input in time-series manner,

said received signal holding means including

a predetermined number of storage circuits for holding in parallel samples in said predetermined number of said received signal sequence input in time-series manner,

10   logic circuits in said predetermined number provided at respective preceding stages of said predetermined number of storage circuits, said logic circuits each activated to pass an input signal to a corresponding one of said storage circuits and mask the input signal otherwise,

first control means for cyclically causing write enable state of said

15   predetermined number of storage circuits at predetermined timing to

cyclically write said samples of the received signal sequence input in time-series manner into said predetermined number of storage circuits at said predetermined timing, and

second control means for cyclically activating said predetermined number of logic circuits at said predetermined timing to cyclically input said samples of the received signal sequence input in time-series manner to said predetermined number of storage circuits at said predetermined timing; and

said digital matched filter further comprising

spreading code generating means for generating a spreading code sequence for said despreading; and

correlation value calculating means for calculating a correlation value between said samples of the received signal sequence held in parallel in said predetermined number of storage circuits and said spreading code sequence,

said correlation value calculating means including

first product-sum calculating means for calculating a correlation value between a part of samples held in said predetermined number of storage circuits and spreading codes corresponding to said part of samples in said generated spreading code sequence,

second product-sum calculating means for calculating a correlation value between the rest of samples held in said predetermined number of storage circuits and spreading codes corresponding to said rest of samples in said generated spreading code sequence, and

decision means for deciding whether the correlation value output from said first product-sum calculating means exceeds a predetermined threshold value to stop calculation by said second product-sum calculating means when said decision means decides that the correlation value output from said first product-sum calculating means does not exceed said predetermined threshold value.

6. The digital matched filter according to claim 5, wherein said predetermined number of logic circuits each have a load capacitance smaller than a load capacitance of each of said predetermined

- 38 -

number of storage circuits.

7.   A digital matched filter for despreading on reception side a received signal sequence having been spread on transmission side, comprising:

received signal holding means for successively holding samples constituting said received signal sequence input in time-series manner,

said received signal holding means including

a first predetermined number of storage circuits for holding in parallel samples in said first predetermined number of said received signal sequence input in time-series manner, said first predetermined number of storage circuits being divided into a second predetermined number of groups,

logic circuits in said first predetermined number provided at respective preceding stages of said first predetermined number of storage circuits, said logic circuits each activated to pass an input signal to a corresponding one of said storage circuits and mask the input signal otherwise,

first control means for cyclically causing write enable state of said first predetermined number of storage circuits at predetermined timing to cyclically write said samples of the received signal sequence input in time-series manner into said first predetermined number of storage circuits at said predetermined timing, and

second control means for cyclically activating said first predetermined number of logic circuits at said predetermined timing to cyclically input said samples of the received signal sequence input in time-series manner to said first predetermined number of storage circuits at said predetermined timing;

said digital matched filter further comprising

spreading code generating means for generating a spreading code sequence for said despreading; and

correlation value calculating means in said second predetermined number provided respectively corresponding to said second predetermined

number of groups each for calculating a correlation value between samples held in parallel in storage circuits of a corresponding group and said spreading code sequence,

35   said second predetermined number of correlation value calculating means each including

first product-sum calculating means for calculating a correlation value between a part of samples held in the storage circuits of the corresponding group and spreading codes corresponding to said part of

40   samples in said generated spreading code sequence,

second product-sum calculating means for calculating a correlation value between the rest of samples held in said storage circuits of the corresponding group and spreading codes corresponding to said rest of samples in said generated spreading code sequence, and

45   decision means for deciding whether the correlation value output from said first product-sum calculating means exceeds a predetermined threshold value to stop calculation by said second product-sum calculating means when said decision means decides that the correlation value output from said first product-sum calculating means does not exceed said

50   predetermined threshold value; and

said digital matched filter further comprising

output control means for successively outputting in time-series manner respective correlation values output from said second predetermined number of correlation value calculating means as correlation

55   values output from one system.

8.   The digital matched filter according to claim 7, wherein

said first predetermined number of logic circuits each have a load capacitance smaller than a load capacitance of each of said first predetermined number of storage circuits.

9.   A mobile wireless terminal for digital radio communication comprising

reception-related modem means for demodulating received digital

data and

signal processing means for processing a signal received by said reception-related modem means to output the processed signal,

said reception-related modem means including a digital matched filter for despreading on reception side a received signal sequence having been spread on transmission side,

said digital matched filter comprising:

received signal holding means for successively holding a predetermined number of samples among samples constituting said received signal sequence input in time-series manner;

spreading code generating means for generating a spreading code sequence for said despreading; and

correlation value calculating means for calculating a correlation value between said predetermined number of samples held in said received signal holding means and said generated spreading code sequence,

said correlation value calculating means including

first product-sum calculating means for calculating a correlation value between a part of the predetermined number of samples held in said received signal holding means and spreading codes corresponding to said part of samples in said generated spreading code sequence,

second product-sum calculating means for calculating a correlation value between the rest of samples of the predetermined number of samples held in said received signal holding means and spreading codes corresponding to said rest of samples in said generated spreading code sequence, and

decision means for deciding whether the correlation value output from said first product-sum calculating means exceeds a predetermined threshold value to stop calculation by said second product-sum calculating means when said decision means decides that the correlation value output from said first product-sum calculating means does not exceed said predetermined threshold value.

10.   A mobile wireless terminal for digital radio communication

- 41 -

comprising

reception-related modem means for demodulating received digital data and

5 signal processing means for processing a signal received by said reception-related modem means to output the processed signal,

said reception-related modem means including a digital matched filter for despreading on reception side a received signal sequence having been spread on transmission side,

10 said digital matched filter comprising:

received signal holding means for successively holding samples constituting said received signal sequence input in time-series manner,

said received signal holding means including

a predetermined number of storage circuits for holding in parallel

15 samples in said predetermined number of said received signal sequence input in time-series manner,

logic circuits in said predetermined number provided at respective preceding stages of said predetermined number of storage circuits, said logic circuits each activated to pass an input signal to a corresponding one of said

20 storage circuits and mask the input signal otherwise,

first control means for cyclically causing write enable state of said predetermined number of storage circuits at predetermined timing to cyclically write said samples of the received signal sequence input in time-series manner into said predetermined number of storage circuits at said

25 predetermined timing, and

second control means for cyclically activating said predetermined number of logic circuits at said predetermined timing to cyclically input said samples of the received signal sequence input in time-series manner to said predetermined number of storage circuits at said predetermined timing; and

30 said digital matched filter further comprising

spreading code generating means for generating a spreading code sequence for said despreading; and

correlation value calculating means for calculating a correlation value between said samples of the received signal sequence held in parallel

35   in said predetermined number of storage circuits and said spreading code sequence.

       11.   The mobile wireless terminal according to claim 10, wherein said predetermined number of logic circuits each have a load capacitance smaller than a load capacitance of each of said predetermined number of storage circuits.

       12.   A mobile wireless terminal for digital radio communication comprising
       reception-related modem means for demodulating received digital data and
5   signal processing means for processing a signal received by said reception-related modem means to output the processed signal,
       said reception-related modem means including a digital matched filter for despreading on reception side a received signal sequence having been spread on transmission side,
10   said digital matched filter comprising:
       received signal holding means for successively holding a first predetermined number of samples among samples constituting said received signal sequence input in time-series manner, said first predetermined number of samples held being divided into a second predetermined number
15   of groups;
       spreading code generating means for generating a spreading code sequence for said despreading;
       correlation value calculating means in said second predetermined number provided respectively corresponding to said second predetermined
20   number of groups each for calculating a correlation value between samples of a corresponding group and said spreading code sequence; and
       output control means for successively outputting in time-series manner respective correlation values output from said second predetermined number of correlation value calculating means as correlation
25   values output from one system.

- 43 -

13. A mobile wireless terminal for digital radio communication comprising

reception-related modem means for demodulating received digital data and

5 signal processing means for processing a signal received by said reception-related modem means to output the processed signal,

said reception-related modem means including a digital matched filter for despreading on reception side a received signal sequence having been spread on transmission side,

10 said digital matched filter comprising:

received signal holding means for successively holding samples constituting said received signal sequence input in time-series manner,

said received signal holding means including

a predetermined number of storage circuits for holding in parallel

15 samples in said predetermined number of said received signal sequence input in time-series manner,

logic circuits in said predetermined number provided at respective preceding stages of said predetermined number of storage circuits, said logic circuits each activated to pass an input signal to a corresponding one of said

20 storage circuits and mask the input signal otherwise,

first control means for cyclically causing write enable state of said predetermined number of storage circuits at predetermined timing to cyclically write said samples of the received signal sequence input in time-series manner into said predetermined number of storage circuits at said

25 predetermined timing, and

second control means for cyclically activating said predetermined number of logic circuits at said predetermined timing to cyclically input said samples of the received signal sequence input in time-series manner to said predetermined number of storage circuits at said predetermined timing; and

30 said digital matched filter further comprising

spreading code generating means for generating a spreading code sequence for said despreading; and

correlation value calculating means for calculating a correlation

- 44 -

value between said samples of the received signal sequence held in parallel
35 in said predetermined number of storage circuits and said spreading code
sequence,

said correlation value calculating means including

first product-sum calculating means for calculating a correlation
value between a part of samples held in said predetermined number of
40 storage circuits and spreading codes corresponding to said part of samples in
said generated spreading code sequence,

second product-sum calculating means for calculating a correlation
value between the rest of samples held in said predetermined number of
storage circuits and spreading codes corresponding to said rest of samples in
45 said generated spreading code sequence, and

decision means for deciding whether the correlation value output
from said first product-sum calculating means exceeds a predetermined
threshold value to stop calculation by said second product-sum calculating
means when said decision means decides that the correlation value output
50 from said first product-sum calculating means does not exceed said
predetermined threshold value.

14. The mobile wireless terminal according to claim 13, wherein
said predetermined number of logic circuits each have a load
capacitance smaller than a load capacitance of each of said predetermined
number of storage circuits.

15. A mobile wireless terminal for digital radio communication
comprising
reception-related modem means for demodulating received digital
data and
5 signal processing means for processing a signal received by said
reception-related modem means to output the processed signal,
said reception-related modem means including a digital matched
filter for despreading on reception side a received signal sequence having
been spread on transmission side,

- 45 -

10   said digital matched filter comprising:

received signal holding means for successively holding samples constituting said received signal sequence input in time-series manner,

said received signal holding means including

a first predetermined number of storage circuits for holding in

15   parallel samples in said first predetermined number of said received signal sequence input in time-series manner, said first predetermined number of storage circuits being divided into a second predetermined number of groups,

logic circuits in said first predetermined number provided at

20   respective preceding stages of said first predetermined number of storage circuits, said logic circuits each activated to pass an input signal to a corresponding one of said storage circuits and mask the input signal otherwise,

first control means for cyclically causing write enable state of said

25   first predetermined number of storage circuits at predetermined timing to cyclically write said samples of the received signal sequence input in time-series manner into said first predetermined number of storage circuits at said predetermined timing, and

second control means for cyclically activating said first

30   predetermined number of logic circuits at said predetermined timing to cyclically input said samples of the received signal sequence input in time-series manner to said first predetermined number of storage circuits at said predetermined timing;

said digital matched filter further comprising

35   spreading code generating means for generating a spreading code sequence for said despreading; and

correlation value calculating means in said second predetermined number provided respectively corresponding to said second predetermined number of groups each for calculating a correlation value between samples

40   held in parallel in storage circuits of a corresponding group and said spreading code sequence,

said second predetermined number of correlation value calculating

- 46 -

means each including

first product-sum calculating means for calculating a correlation value between a part of samples held in the storage circuits of the corresponding group and spreading codes corresponding to said part of samples in said generated spreading code sequence,

second product-sum calculating means for calculating a correlation value between the rest of samples held in said storage circuits of the corresponding group and spreading codes corresponding to said rest of samples in said generated spreading code sequence, and

decision means for deciding whether the correlation value output from said first product-sum calculating means exceeds a predetermined threshold value to stop calculation by said second product-sum calculating means when said decision means decides that the correlation value output from said first product-sum calculating means does not exceed said predetermined threshold value; and

said digital matched filter further comprising

output control means for successively outputting in time-series manner respective correlation values output from said second predetermined number of correlation value calculating means as correlation values output from one system.

16.   The mobile wireless terminal according to claim 15, wherein said first predetermined number of logic circuits each have a load capacitance smaller than a load capacitance of each of said first predetermined number of storage circuits.